

AMENDMENTIn the claims:

31. (Currently amended) In a data communication system including a plurality of network devices, wherein the plurality of network devices includes first and second network devices, and wherein during initialization, communication system resources for carrying out session-based services are registered with and allocated by the second network device, a method for providing dynamic services comprising the steps of:

receiving during initialization at the second network device a registration message from the first network device containing parameters associated with a plurality of capabilities of the first network device used for carrying out at least one deferred session-based service between at least one service device associated with the first network device and a service server associated with the second network device, wherein each of the at least one deferred-session-based service comprises a service for which communication system resources are registered with, but not allocated by the second network device until the at least one deferred session-based service is later activated, and activation of the at least one deferred-session-based service is operable to occur after a session is established between the first and second devices;

configuring the second network device and the service server for the at least one deferred-session-based service;

associating a deferred-inactive-service identifier with the at least one deferred-session-based service, wherein the deferred-inactive-service identifier is used to activate the at least one deferred-session-based service at the later time; and

sending the deferred-inactive-service identifier to the first network device, wherein when the at least one deferred-session-based service is later activated, a communication link utilizing the parameters is established between the first and second network devices;
receiving at the second network device from the first network device the deferred-inactive-service identifier;

responsive to the deferred-inactive-service identifier, activating the at least one deferred-session-based service between the session server and the service device; and
changing the deferred-inactive-service identifier to a deferred-active-service identifier.

32. (Cancelled)

33. (Currently amended) The method of claim 31 32, further comprising the steps of:

receiving at the second network device from the first network device the deferred-active-service identifier;

responsive to the deferred-active-service identifier, deactivating the at least one deferred-session-based service between the session server and the service device; and
changing the deferred-active-service identifier to a deferred-inactive-service identifier.

34. (Currently amended) In a data communication system including a plurality of network devices, wherein the plurality of network devices includes first and second network devices, and wherein during initialization, communication system resources for carrying out session-based services are registered with and allocated by the second network device, a method for providing dynamic services comprising the steps of:

sending during initialization from the first network device to the second network device a registration message containing parameters associated with a plurality of capabilities of the first network device used for carrying out at least one deferred

session-based service between at least one service device associated with the first network device and a service server associated with the second device, wherein each of the at least one deferred-session-based service comprises a service in which communication system resources are registered with, but not allocated by the second network device until the at least one deferred session-based service is later activated, and activation of the at least one deferred-session-based service is operable to occur after a session is established between the first and second devices, and wherein a deferred-inactive-service identifier is associated with the at least one deferred-session-based service, and wherein the deferred-inactive-service identifier is used to activate the at least one deferred-session-based service at the later time; and

receiving at the first network device from the second network device the deferred-inactive-service identifier, wherein when the at least one deferred session-based service is later activated, a communication link utilizing the parameters is established between the first and second network devices; and

sending to the second network device from the first network device the deferred-inactive-service identifier; wherein in response to the deferred-inactive-service identifier, the at least one deferred-session-based service between the service server and the service device is activated; and wherein the deferred-inactive-service identifier is changed to a deferred-active-service identifier.

35. (Cancelled)

36. (Currently amended) The method of claim ~~34~~³⁵, further comprising the steps of:

sending to the second network device from the first network device the deferred-active-service identifier; wherein responsive to the deferred-active-service identifier, the at

least one deferred-session-based service between the service server and the service device is deactivated; and wherein the deferred-active-service identifier is changed to a deferred-inactive-service identifier.

37. (Currently amended) In a data communication system including a plurality of network devices, wherein the plurality of network devices includes first and second network devices, and wherein during initialization, communication system resources for carrying out session-based services are registered with and allocated by the second network device, a method for providing dynamic services comprising the steps of:

the second network device receiving a first message from the first network device, wherein the first message includes parameters associated with a plurality of capabilities of the first network device used for carrying out at least one deferred-session-based service between a service server associated with the second network device and a service device associated with the first network device, wherein each of the at least one deferred-session-based service comprises a service in which communication system resources are registered with, but not allocated by the second network device until the at least one deferred session-based service is later activated, and activation of the at least one deferred-session-based service is operable to occur after a session is established between the first and second devices;

extracting the parameters from the first message;

creating a service-session profile for the at least one deferred-session-based service, wherein the service-session profile includes one or more of the parameters;

using the service-session profile to configure the service server and the second network device for the at least one deferred-session-based service for activation at a later time;

associating the service-session profile with a deferred-inactive-service identifier, wherein the deferred-inactive-service identifier is used to activate the at least one deferred-session-based service at the later time; and

sending the deferred-inactive-service identifier to the first network device in a second message, wherein when the deferred-inactive-service identifier is used to later activate the at least one deferred-session-based service, a communication link utilizing the service session profile is established between the first and second network devices;

the second network device receiving from the first network device a service request to activate the at least one deferred-session-based service, wherein the service request includes the deferred-inactive-service identifier;

responsive to the deferred-inactive-service identifier, activating the at least one deferred-session-based service between the service server and the service device; and

changing the deferred-inactive-service identifier to a deferred-active-service identifier.

38. (Previously presented) A computer readable medium having stored therein instructions for causing a central processing unit to execute the method of claim 37.
39. (Previously presented) The method of claim 37, wherein the first network device is a cable modem and the second network device is a cable modem termination system.
40. (Previously presented) The method of claim 37, wherein the deferred inactive service identifier is a Medium Access Control Protocol service identifier.

41. (Previously presented) The method of claim 37, wherein the parameters include any of quality-of-service, class-of-service, type-of-service or voice service parameters.
42. (Previously presented) The method of claim 37, wherein the first message is a registration message and the second message is a registration response message.
43. (Previously presented) The method of claim 37, wherein the deferred-inactive-service identifier is encoded in a Type-Length-Value format.
44. (Cancelled)
45. (Previously presented) The method of claim 37, further comprising the step of generating a service event on the service server to request activation of the at least one deferred-session-based service, wherein the step of generating a service event occurs prior to activation of the at least one deferred-session-based service.
46. (Currently amended) The method of claim 37-44, wherein the service server is any of a Remote Authentication Dial In User Server, a Voice over Internet Protocol server, Asynchronous Transport Mode Server, Frame Relay Server, or an Integrated Services Digital Network server, or an Asymmetric Digital Subscriber Line server.
47. (Previously presented) The method of claim 45, wherein the step of generating a service event includes generating any of an authentication, authorization or an accounting event.
48. (Currently amended) The method of claim 37, further comprising the steps of: in a data communication system including a plurality of network devices, wherein the plurality of network devices includes first and second network devices, and wherein during initialization, communication system resources for carrying out session-based services are registered with

and allocated by the second network device, a method for providing dynamic services comprising the steps of:

the second network device receiving a first message from the first network device, wherein the first message includes parameters associated with a plurality of capabilities of the first network device used for carrying out at least one deferred-session-based service between a service server associated with the second network device and a service device associated with the first network device, wherein each of the at least one deferred-session-based service comprises a service in which communication system resources are registered with, but not allocated by the second network device until the at least one deferred session-based service is later activated, and activation of the at least one deferred-session-based service is operable to occur after a session is established between the first and second devices;

extracting the parameters from the first message;

creating a service-session profile for the at least one deferred-session-based service, wherein the service-session profile includes one or more of the parameters;

using the service-session profile to configure the service server and the second network device for the at least one deferred-session-based service for activation at a later time;

associating the service-session profile with a deferred-inactive-service identifier, wherein the deferred-inactive-service identifier is used to activate the at least one deferred-session-based service at the later time;

sending the deferred-inactive-service identifier to the first network device in a second message, wherein when the deferred-inactive-service identifier is used to later activate

the at least one deferred-session-based service, a communication link utilizing the service session profile is established between the first and second network devices;

the second network device receiving from the first network device a service request to deactivate at least one deferred-session-based service, wherein the service request includes the deferred-active-service identifier;

generating a service event on the service server to request deactivation of the desired service;

deactivating the at least one deferred-session-based service; and

changing the deferred-active-service identifier to a deferred-inactive-service identifier.

49. (Previously presented) In a data communication system including a plurality of network devices, wherein the plurality of network devices includes first and second network devices, wherein during initialization, communication system resources for carrying out session-based services are registered with and allocated by the second network device, ~~and wherein a session is established between the first and second devices,~~ a method for providing dynamic services comprising the steps of:

the second network device receiving a first message from the first network device, wherein the first message includes parameters associated with a plurality of capabilities of the first network device used for carrying out at least one deferred-session-based service between a service server associated with the second network device and a service device associated with the first network device, wherein each of the at least one deferred-session-based service comprises a service in which communication system resources are registered with, but not allocated by the second network device until the at least one deferred session-based service is later activated, and activation of the at least

one deferred-session-based service is operable to occur after a session is established between the first and second devices;

extracting the parameters from the first message;

creating a service-session profile for the at least one deferred-session-based service,

wherein the service-session profile includes one or more of the parameters;

using the service-session profile to configure the service server and the second network device for the at least one deferred-session-based service for activation at a later time;

associating the service-session profile with a deferred-inactive-service identifier, wherein the deferred-inactive-service identifier is used to activate the at least one deferred-session-based service at the later time;

sending the deferred-inactive-service identifier to the first network device in a second message, wherein when the deferred-inactive-service identifier is used to later activate the at least one deferred-session-based service, a communication link utilizing the service session profile is established between the first and second network devices;

the second network device receiving from the first network device a service request to activate at least one deferred-session-based service between a service server associated with the second network device and a service device associated with the first network device, wherein the service request includes a the deferred-inactive-service identifier that is registered with the second network device during initialization and associated with the at least one deferred-session-based service, wherein each of the at least one deferred-session-based service comprises a service in which communication system resources are registered with, but not allocated by the second network device

~~until the at least one deferred session-based service is activated, and activation of the at least one deferred session-based service is operable to occur after a session is established between the first and second devices;~~

responsive to the deferred-inactive-service identifier, generating a service event on the service server to request activation of the at least one deferred-session-based service;

activating the at least one deferred-session-based service using a previously created service-session profile associated with the deferred-inactive-service identifier; and

changing the deferred-inactive-service identifier to a deferred-active-service identifier, wherein when the at least one deferred-session-based service is activated, a communication link utilizing the service session profile is established between the first and second network devices.

50. (Currently amended) A computer readable medium having stored therein instructions for causing a central processing unit to execute the method of claim ~~49~~ 53.
51. (Previously presented) The method of claim 49, wherein the first network device is a cable modem and the second network device is a cable modem termination system.
52. (Previously presented) The method of claim 49, wherein the deferred-inactive-service identifier is a Medium Access Control Protocol service identifier and the deferred-active-service identifier is a Medium Access Control Protocol Service identifier.
53. (Previously presented) The method of claim 49, wherein the step of generating a service event includes generating any of an authentication, authorization or an accounting event.

54. (Previously presented) The method of claim 49, wherein the service server is any of a Remote Authentication Dial In User Server, a Voice over Internet Protocol server, Asynchronous Transport Mode Server, Frame Relay Server, an Integrated Services Digital Network server, or an Asymmetric Digital Subscriber Line server.
55. (Previously presented) The method of claim 49, wherein the service request is a Voice over Internet Protocol off-hook request.
56. (Cancelled)
57. (Currently amended) A computer readable medium having stored therein instructions for causing a central processing unit to execute the method of claim ~~48~~ 56.
58. (Currently amended) The method of claim ~~48~~ 56, wherein the deferred-active-service identifier is a Medium Access Control Protocol service identifier and the deferred-inactive-service identifier is a Medium Access Control Protocol service identifier.
59. (Currently amended) The method of claim ~~48~~ 56, wherein the service request is a Voice over Internet Protocol on-hook request.
60. (Currently amended) ~~The method of claim 37, further comprising in a data communication system including a plurality of network devices, wherein the plurality of network devices includes first and second network devices, and wherein during initialization, communication system resources for carrying out session-based services are registered with and allocated by the second network device, a method for providing dynamic services comprising the steps of:~~
- ~~the first network device sending to the second network device a service request to~~
- ~~activate at least one deferred session-based service between a service server associated~~

~~with the second network device and a service device associated with the first network device, wherein each of the at least one deferred-session-based service comprises a service in which communication system resources are registered with, but not allocated by the second network device until the at least one deferred-session-based service is later activated, and activation of the at least one deferred-session-based service is operable to occur after a session is established between the first and second devices, and wherein the service request includes a deferred-inactive-service identifier that is registered with the second network device during initialization and associated with at least one deferred-session-based service; and~~

~~the first network device receiving from the second network device a service notification from the service server indicating that the at least one deferred-session-based service has been activated, wherein when the at least one deferred-session-based service is activated, a communication link is established between the first and second network devices, and wherein the communication link utilizes parameters associated with the plurality of capabilities of the first network device used for carrying out the at least one deferred-session-based service.~~

61. (Previously presented) A computer readable medium having stored therein instructions for causing a central processing unit to execute the methods of claim 60.
62. (Currently amended) ~~The method of claim 48, further comprising in a data communication system including a plurality of network devices, wherein the plurality of network devices includes first and second network devices, wherein during initialization, communication system resources for carrying out session-based services are registered with and allocated~~

~~by the second network device, and wherein a session is established between the first and second devices, a method for providing dynamic services comprising the steps of:~~

~~a first network device sending a service request to a second network device to deactivate at least one deferred-session-based service occurring between a service server associated with the second network device and a service device associated with the first network device, wherein the service request includes a deferred active service identifier, wherein the deferred active service identifier is a complement of a deferred inactive service identifier that is registered during initialization with the second network device and associated with the at least one deferred session-based service, wherein each of the at least one deferred session-based service comprises a service in which communication system resources are registered with, but not allocated by the second network device until the at least one deferred session-based service was later activated, and activation of the at least one deferred session-based service occurred after a session was established between the first and second devices; and~~

~~the first network device receiving a service notification from the service server indicating that the at least one deferred-session-based service has been deactivated, wherein when the at least one deferred session-based service is deactivated, a communication link between the first and second network devices is terminated, and wherein the communication link utilized parameters associated with the plurality of capabilities of the first network device used for carrying out the at least one deferred session-based service.~~

63. (Previously presented) A computer readable medium having stored therein instructions for causing a central processing unit to execute the method of claim 62.

64. (Currently amended) A system for providing dynamic services to a network device in data communication system, wherein the system includes first and second network devices, and wherein during initialization, communication system resources for carrying out session-based services are registered with and allocated by the second network device, the system comprising in combination:

the second network device ~~that is operable to provide~~ providing at least one deferred-session-based service between a service device associated with the first network device and a service server associated with the second network device, wherein each of the at least one deferred-session-based service comprises a service in which communication system resources are registered with, but not allocated by the second network device until the at least one deferred session-based service is later activated, and activation of the at least one deferred-session-based service is operable to occur after a session is established between the first and second devices;

a service-session profile ~~that includes~~ including parameters associated with a plurality of capabilities of the first network device used for carrying out the at least one deferred-session-based service, wherein the service-session profile is used for configuring the second network device and the service server for the at least one deferred-session-based service, and wherein when the at least one deferred-session-based service is later activated, a communication link utilizing the service session profile is established between the first and second network devices;

a deferred-inactive-service identifier ~~that is~~ associated with the service-session profile for later activating a previously-configured at least one deferred-session-based service;

a deferred-active-service identifier that is created from the deferred-inactive-service identifier for indicating that the at least one deferred-session-based service is active; and

a service event generator for generating a service event on the service server to request activation of the at least one deferred-session-based service; wherein the second network device is operable to (i) receive from the first network device the deferred-inactive-service identifier; (ii) activate, responsive to the deferred-inactive-service identifier, the at least one deferred-session-based service between the session server and the service device, and (iii) change the deferred-inactive-service identifier to the deferred-active-service identifier.

65. (Cancelled)

66. (Cancelled)